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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/711,640

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Basanth Jagannathan

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45988 7590 02/05/2009  
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EXAMINER

NGUYEN, TRAM HOANG

ART UNIT

PAPER NUMBER

2818

NOTIFICATION DATE

DELIVERY MODE

02/05/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/711,640	<b>Applicant(s)</b> JAGANNATHAN ET AL.	
	<b>Examiner</b> TRAM H. NGUYEN	<b>Art Unit</b> 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 14-20 and 31-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-20, 31-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/05/2009 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claims 14-17, 31-36, 40-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (US 6,097,066; hereinafter Lee)***

Regarding **claim 14**, Lee discloses a semiconductor device in figs. 2-3, comprising:

a substrate (P-substrate in fig. 3) made of semiconductor material;

a source and a drain (220/210 in fig. 3) arranged within the substrate (P-substrate in fig. 3);

a gate (200 in fig. 3) formed on the substrate (P-substrate in fig. 3) between the source and drain (220/210 in fig. 3); and

a substrate contact (230 in fig. 3) formed within the substrate (P-substrate in fig. 3) in electrical contact with the source (220), a bottom surface of the substrate contact (230) being arranged over a portion of the semiconductor material of the substrate (P-substrate in fig. 3), and the substrate contact (230) being arranged adjacent to a side of the source (220) without an intervening shallow trench isolation structure (see fig. 3).

In reference to the claim language referring to the function of the semiconductor device, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963). In reference to the claim language pertaining to the “wherein little or no current flows through the substrate contact, and wherein the substrate contact helps to keep an active region of the semiconductor device at a known voltage potential and acts as a collection source for stray currents”, the claiming of a new use, new function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. (In re Best, 195 USPQ 430, 433 (CCPA 1977) and In re Swinehart, 439 F. 2d 210, 169 USPQ 226 (CCPA 1971); please see MPEP § 2112). Since Lee shows all the features of the claimed invention, the “wherein little or no current flows through the substrate contact, and wherein the substrate contact helps to keep an active region of the semiconductor

device at a known voltage potential and acts as a collection source for stray currents” is an inherent property of the Lee invention.

Regarding **claim 15**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above.

In reference to the claim language referring to the function of the substrate contact, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458,459 (CCPA 1963). In reference to the claim language pertaining to the “substrate contact being configured to shield the semiconductor device from electrical noise”, the claiming of a new use, new function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. (In re Best, 195 USPQ 430,433 (CCPA 1977) and In re Swinehart, 439 F. 2d 210, 169 USPQ 226 (CCPA 1971); please see MPEP § 2112). Since Baldwin shows all the features of the claimed invention, the “substrate contact being configured to shield the semiconductor device from electrical noise” is an inherent property of the Baldwin invention.

Regarding **claim 16**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 3 of Lee shows the substrate contact (230) being in direct physical contact with the source (220) of the semiconductor device.

Regarding **claim 17**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 3 of Lee shows the substrate contact (230) comprises a p<sup>+</sup> region.

Regarding **claim 31**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 2 of Lee shows the substrate contact (230) at least one of: completely encircles an active region; almost completely encircles an active region; encircles three-quarters of an active region; and encircles half of an active region.

Regarding **claim 32**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 2 of Lee shows the semiconductor device comprises an FET prime cell.

Regarding **claim 33**, Lee discloses a semiconductor device in figs. 2-3, comprising:

a substrate (P-substrate in fig. 3) made of semiconductor material;

a source and a drain (220/210) arranged within the substrate (P-substrate in fig. 3);

a gate (220) formed on the substrate (P-substrate in fig. 3) between the source and drain (220/210); and

a ring substrate contact (230) formed within the substrate (P-substrate in fig. 3) in electrical contact with the source (220), a bottom surface of the substrate contact (230) being arranged over a portion of the semiconductor material of the substrate (P-substrate in fig. 3), wherein the ring substrate contact (230) one of;

abuts a side of the source (220) without an intervening shallow trench isolation structure, and

is arranged adjacent to the side of the source (220) without an intervening shallow trench isolation structure, and

In reference to the claim language referring to the function of the semiconductor device, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963). In reference to the claim language pertaining to the “wherein the substrate contact helps to keep an active region of the semiconductor device at a known voltage potential and acts as a collection source for stray currents”, the claiming of a new use, new function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. (In re Best, 195 USPQ 430, 433 (CCPA 1977) and In re Swinehart, 439 F. 2d 210, 169 USPQ 226 (CCPA 1971); please see MPEP § 2112). Since Lee shows all the features of the claimed invention, the “wherein the substrate contact helps to keep an active region of the semiconductor device at a known voltage potential and acts as a collection source for stray currents” is an inherent property of the Lee invention.

Regarding **claim 34**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above.

In reference to the claim language referring to the function of the substrate contact, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458,459 (CCPA 1963). In reference to the claim language pertaining to the “substrate contact being configured to shield the semiconductor device from electrical noise”, the claiming of a new use, new function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. (In re Best, 195 USPQ 430,433 (CCPA 1977) and In re Swinehart, 439 F. 2d 210, 169 USPQ 226 (CCPA 1971); please see MPEP § 2112). Since Baldwin shows all the features of the claimed invention, the “substrate contact being configured to shield the semiconductor device from electrical noise” is an inherent property of the Baldwin invention.

Regarding **claim 35**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 3 of Lee shows the ring substrate contact (230) is in direct physical contact with the source (220) of the semiconductor device.

Regarding **claim 36**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 3 of Lee shows the ring substrate contact (230) comprises a p<sup>+</sup> region.



Regarding **claim 40**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 2 of Lee shows the semiconductor device comprises an FET prime cell.

Regarding **claim 41**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 2 of Lee shows the substrate contact (230) at least one of: completely encircles an active region; almost completely encircles an active region; encircles three-quarters of an active region; and encircles half of an active region.

Regarding **claim 42**, Lee discloses a semiconductor device in figs. 2-3, comprising:

- a substrate (P-substrate in fig. 3) made of semiconductor material;

- a source and a drain (220/210) arranged within the substrate (P-substrate in fig. 3);

- a gate (220) formed on the substrate (P-substrate in fig. 3) between the source and drain (220/210); and

- a substrate contact (230) formed within the substrate (P-substrate in fig. 3) in electrical contact with the source (220), a bottom surface of the substrate contact (230) being arranged over a portion of the semiconductor material of the substrate (P-substrate in fig. 3), the substrate contact (230) at last one of:

  - completely encircling an active region;

  - almost completely encircling an active region;

  - encircling three-quarters of an active region; and

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encircling half of an active region (see fig. 2),  
wherein the ring substrate contact (230) one of;  
abuts a side of the source (220) without an intervening shallow trench isolation structure, and

is arranged adjacent to the side of the source (220) without an intervening shallow trench isolation structure, and

In reference to the claim language referring to the function of the semiconductor device, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963). In reference to the claim language pertaining to the “wherein the substrate contact helps to keep an active region of the semiconductor device at a known voltage potential and acts as a collection source for stray currents”, the claiming of a new use, new function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. (In re Best, 195 USPQ 430, 433 (CCPA 1977) and In re Swinehart, 439 F. 2d 210, 169 USPQ 226 (CCPA 1971); please see MPEP § 2112). Since Lee shows all the features of the claimed invention, the “wherein the substrate contact helps to keep an active region of the semiconductor device at a known voltage potential and acts as a collection source for stray currents” is an inherent property of the Lee invention.

Regarding **claim 43**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 2 of Lee shows the semiconductor device comprises an FET prime cell.

Regarding **claim 44**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 3 of Lee shows the substrate contact (230) abuts the side of the source (220).

Regarding **claim 45**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. As for the recitation “the source and the substrate are held at a same voltage potential”, it is drawn to a manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F.2d 1647 (1987); See also In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

***Claims 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claim 14 above, and further in view of Rice (US 4,738,936).***

Regarding **claim 18**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above except for the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger.

Fig. 1H of Rice has a similar structure (see col. 4, lines 36-38) having the source comprises a source finger (60) and the substrate contact (20) abuts all one side of the source finger (60) (col. 4, line 19).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger as taught by Rice in the device of Lee in order to reduce expensive packaging techniques, further reduce output capacitance, and to reduce or eliminate junction capacitance (see Rice: co1.1, lines 56-59).

Regarding **claim 19**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above except for the source comprising at least two

source fingers arranged within substrate, wherein the substrate contact abuts two of the two source fingers.

Fig. 1H of Rice has a similar structure (see col. 4, lines 36-38) having two source fingers (refer to the upper portion and lower portion of left 60) arranged within substrate (10), wherein the substrate contact (20) abuts two of the two source fingers (60).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the source comprising at least two source fingers arranged within substrate, wherein the substrate contact abuts two of the two source fingers as taught by Rice in the device of Lee in order to reduce expensive packaging techniques, further reduce output capacitance, and to reduce or eliminate junction capacitance (see Rice: co1.1, lines 56-59).

***Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claim 14 above, and further in view of Herzum et al. (US 2004/0238871; hereinafter Herzum)***

Regarding **claim 20**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above except for the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact.

Herzum has a similar structure wherein fig. 3 shows the substrate contact (reference numeral 12) comprises a p+-type doped silicon tab contacting source (reference numeral 14) and a silicide layer (reference numeral 52) on a top of the

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substrate contact (reference numeral 12). Therefore, it would have been obvious to one having ordinary skill in the art at the same time the invention was made to include the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact as taught by Herzum in device of Lee so that it improves the ohmic contact (see Herzum: par.[0036]).

***Claims 37, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claim 33 above, and further in view of Rice (US 4,738,936).***

Regarding **claim 37**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above except for the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger.

Fig. 1H of Rice has a similar structure (see col. 4, lines 36-38) having the source comprises a source finger (60) and the substrate contact (20) abuts all one side of the source finger (60) (col. 4, line 19).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger as taught by Rice in the device of Lee in order to reduce expensive packaging techniques, further reduce output capacitance, and to reduce or eliminate junction capacitance (see Rice: co1.1, lines 56-59).

Regarding **claim 38**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above except for at least two source fingers arranged within substrate, wherein the substrate contact abuts two of the two source fingers.

Fig. 1H of Rice has a similar structure (see col. 4, lines 36-38) having two source fingers (refer to the upper portion and lower portion of left 60) arranged within substrate (10), wherein the substrate contact (20) abuts two of the two source fingers (60).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger as taught by Rice in the device of Lee in order to reduce expensive packaging techniques, further reduce output capacitance, and to reduce or eliminate junction capacitance (see Rice: co1.1, lines 56-59).

***Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claim 33 above, and further in view of Herzum et al. (US 2004/0238871; hereinafter Herzum)***

Regarding **claim 39**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above except for the ring substrate contact comprises a p-type doped silicon tab contacting source and further comprising silicide layer on a top of the substrate contact.

Herzum has a similar structure wherein fig. 3 shows the substrate contact (reference numeral 12) comprises a p+-type doped silicon tab contacting source

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(reference numeral 14) and a silicide layer (reference numeral 52) on a top of the substrate contact (reference numeral 12). Therefore, it would have been obvious to one having ordinary skill in the art at the same time the invention was made to include the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact as taught by Herzum in device of Lee so that it improves the ohmic contact (see Herzum: par.[0036]).

***Claims 46-47 is rejected under 35 U.S.C.1 103(a) as being unpatentable over Lee as applied to claim 14 above, and further in view of Herzum et al. (US 2004/0238871; hereinafter Herzum)***

Regarding **claim 46**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above except for the substrate contact comprises a p+ contact arrange with an active region and wherein silicide provides electrical contact between the source and the active region.

Herzum has a similar structure wherein fig. 3 shows the substrate contact (reference numeral 12) comprises a p+ contact arrange with an active region (10) (see par.[0035]) and wherein silicide (reference numeral 52) provides electrical contact between the source (14) and the active region (10).

Therefore, it would have been obvious to one having ordinary skill in the art at the same time the invention was made to include the substrate contact comprises a p+ contact arrange with an active region and wherein silicide provides electrical contact



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between the source and the active region as taught by Herzum in device of Lee so that it improve the ohmic contact (see par.[0036]).

Regarding **claim 47**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 3 of Lee shows the source (220), the drain (210) and the substrate contact (230) are formed in the same substrate (P-substrate).

Lee fails to teach silicide arranged over the source and an active region of the semiconductor device and providing electrical contact between the source and the active region.

Fig. 3 of Herzum shows a similar semiconductor device structure including: silicide (52) arranged over the source (14) and an active region of the semiconductor device (10) and providing electrical contact between the source and the active region (see par. [0036]).

Therefore, it would have been obvious to one having ordinary skill in the art at the same time the invention was made to include the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact as taught by Herzum in device of Lee so that it improves the ohmic contact (see Herzum: par.[0036]).

***Claim 48 is rejected under 35 U.S.C.1 103(a) as being unpatentable over Lee as applied to claim 33 above, and further in view of Herzum et al. (US 2004/0238871; hereinafter Herzum)***

Regarding **claim 48**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 2 of Lee shows the source (220), the drain (210) and the ring substrate contact (230) are formed in the same substrate (P-substrate).

Lee fails to teach silicide arranged over the source and an active region of the semiconductor device and providing electrical contact between the source and the active region.

Fig. 3 of Herzum shows a similar semiconductor device structure including: silicide (52) arranged over the source (14) and an active region of the semiconductor device (10) and providing electrical contact between the source and the active region (see par. [0036]).

Therefore, it would have been obvious to one having ordinary skill in the art at the same time the invention was made to include the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact as taught by Herzum in device of Lee so that it improves the ohmic contact (see Herzum: par.[0036]).

***Claim 49 is rejected under 35 U.S.C.1 103(a) as being unpatentable over Lee as applied to claim 42 above, and further in view of Herzum et al. (US 2004/0238871; hereinafter Herzum)***

Regarding **claim 49**, Lee discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 3 of Lee shows the source (220), the

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drain (2210) and the substrate contact (230) are formed in the same substrate (P-substrate).

Lee fails to teach silicide arranged over the source and an active region of the semiconductor device and providing electrical contact between the source and the active region.

Fig. 3 of Herzum shows a similar semiconductor device structure including: silicide (52) arranged over the source (14) and an active region of the semiconductor device (10) and providing electrical contact between the source and the active region (see par. [0036]).

Therefore, it would have been obvious to one having ordinary skill in the art at the same time the invention was made to include the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact as taught by Herzum in device of Lee so that it improves the ohmic contact (see Herzum: par.[0036]).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tram Hoang Nguyen whose telephone number is (571) 272-5526. The examiner can normally be reached on 8:30am-5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (703)872-9306. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Tram H Nguyen/  
Examiner, Art Unit 2818**

**/DAO H NGUYEN/  
Primary Examiner, Art Unit 2818  
January 31, 2009**